

CLAIMS

Claims 1 – 34 (Cancelled).

Claim 35 (Currently Amended): A procedure for layered composition of a metal casting mould, comprising the steps of:

- a) mixing solid particles of a bonding agent comprising a salt-crystal or a salt-crystal and protein combination, with a sand that comprises quartz sand, zircon sand, olivine sand, fireclay sand, or a combination thereof, to form a bonding agent/sand admixture;
- b) applying a thin layer of the bonding agent/sand admixture to an assembly field of an assembly platform;
- c) selectively applying an aqueous solvent via a droplet generator to a cross-sectional area of the metal casting mould being generated, in a sufficient dose so that the sand is bound by the salt-crystal or the salt-crystal and protein combination without impairing the outline and accuracy of the metal casting mould on the assembly field of the assembly platform;
- d) dissolving with the aqueous solvent the salt-crystal or salt-crystal and protein combination with the aqueous solvent, so that the salt-crystal or salt-crystal and protein combination substantially encompasses the sand particles within a layer and any underlying sand particles that may be present;
- e) removing through drying the aqueous solvent so that the bonding agent/sand admixture bind together;
- f) lowering the assembly platform;
- g) repeating at least steps (a)-(f) for applying an additional layer until the metal casting mould is complete;
- h) casting a metal casting from the resulting metal casting mould;
- i) coring the metal casting through immersion in a water bath after the metal casting has been cast;
- j) dissolving the bonding agent/sand admixture in the water bath; and
- k) recycling the sand from the water bath.

Claim 36 (Previously Presented): The procedure according to claim 35, wherein the solvent is removed by applying microwave radiation heating or warm air.

Claim 37 (Previously Presented): The procedure according to claim 35, whereby the bonding agent comprises at least magnesium sulphate or sodium polyphosphate.

Claim 38 (Currently Amended): The procedure according to claim 35, wherein the salt-crystal or the salt-crystal and protein combination comprises 3 percent by weight water before the salt-crystal or the salt-crystal and protein combination is applied to the assembly platform.

Claim 39 (Previously Presented): The procedure according to claim 35, wherein the step of removing begins after a sufficient amount of reaction time has elapsed.

Claim 40 (Previously Presented): The procedure according to claim 35, wherein the casting mould is sufficiently dried so that boiling retardation is prevented.

Claim 41 (Previously Presented): The procedure according to claim 39, wherein the casting mould is sufficiently dried so that boiling retardation is prevented.

Claim 42 (Currently Amended): A method for producing a model comprising:

- a) mixing solid particles of a bonding agent comprising a salt-crystal, a protein, or both, with particles of sand the particles of sand including: quartz sand, zircon sand, olivine sand, fireclay sand, or a combination thereof, to form a bonding agent/sand solid particle admixture;
- b) applying a thin layer of the bonding agent/sand solid particle admixture to an assembly field of an assembly platform;

- c) selectively applying a solvent to a cross-sectional area of the thin layer of the bonding agent/sand solid particle admixture, to underlying sand particles that may be present, to the bonding agent/sand admixture in required areas for reacting the solvent with the bonding agent/sand admixture, or a combination thereof, in a sufficient dose so that the particles of sand within the thin layer are bonded to each other by the salt crystal, the protein, or both without impairing the outline and accuracy of the metal casting mould on the assembly field of the assembly platform;
- d) drying the particles of sand so that the solvent is removed;
- e) lowering the assembly platform; and
- f) repeating at least steps (a)-(e) for applying an additional layer until the model is complete.

Claim 43 (Previously Presented): The procedure of claim 42, further including a step of recycling the sand from the resulting mould.

Claim 44 (Previously Presented): The method of claim 42, wherein the solvent dissolves the bonding agent so that the particles of sand are coated with the bonding agent.

Claim 45 (Previously Presented): The method of claim 42, wherein the solvent essentially comprises water.

Claim 46 (Previously Presented): The method of claim 45, wherein the solvent is applied by a droplet generator.

Claim 47 (Previously Presented): The method of claim 45, wherein the solvent is applied by screen printing or spraying through a template.

Claim 48 (Previously Presented): The method of claim 42, wherein the solvent is removed by drying after an appropriate reaction time has elapsed.

Claim 49 (Previously Presented): The method of claim 42, whereby the bonding agent comprises magnesium sulphate or sodium polyphosphate.

Claim 50 (Previously Presented): The method of claim 42, whereby the model is a metal casting mould.

Claim 51 (Previously Presented): The procedure according to claim 42, wherein the step of drying begins after a sufficient amount of reaction time has elapsed.

Claim 52 (Previously Presented): The procedure according to claim 42, wherein the casting mould is sufficiently dried so that boiling retardation is prevented.

Claim 53 (Currently Amended): The procedure according to claim [[52]]51, wherein the casting mould is sufficiently dried so that boiling retardation is prevented.

Claim 54 (Previously Presented): The procedure according to claim 42, wherein the bonding agent comprises 3 percent by weight water before the bonding agent is applied to the assembly platform.